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## Virtual Network Services

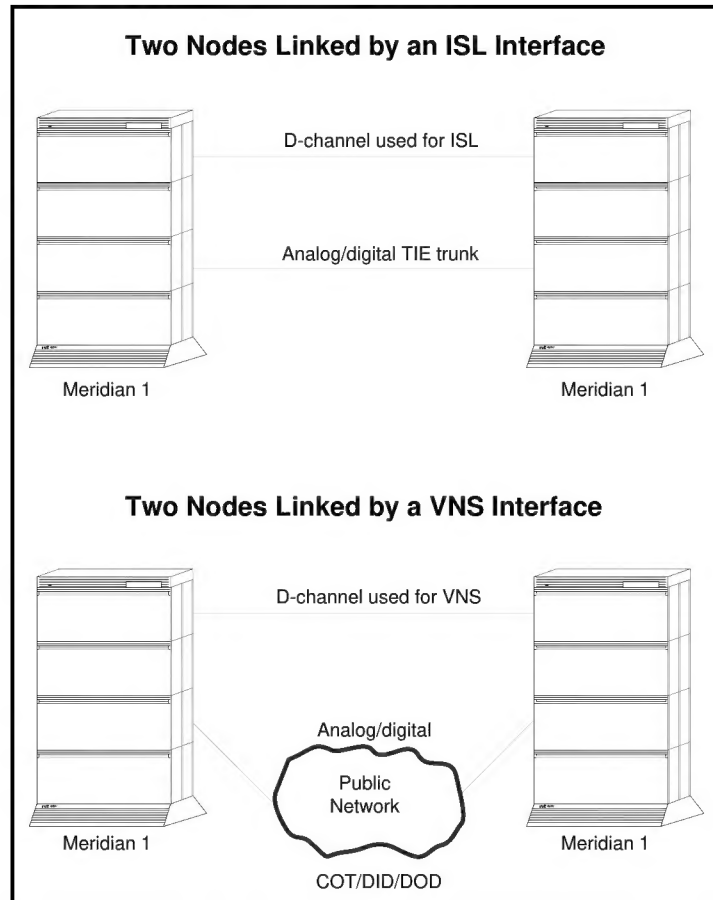
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The Virtual Network Services (VNS) feature offers a means to use Meridian 1 Integrated Services Digital Network (ISDN) networking features when two Meridian 1 systems are linked by a D-channel and an available Public Switched Telephone Network (PSTN) trunk exists. The PSTN trunks in this configuration serve as the B-channel for the call's duration.

VNS is an enhancement of the ISDN Signaling Link (ISL) interface. The enhancement allows the voice and the signaling of a call to take different physical paths. In the case of an ISL call, the D-channel is used for signaling, whereas the voice/data uses a TIE trunk (Meridian 1 to Meridian 1 connection only). The VNS feature extends the number of trunk types supported for the voice path by including the possibility of using different public trunks (e.g., COT, DID, DOD).

Figure 120 depicts the difference between two nodes linked by an ISL interface and two nodes linked using VNS.

**Figure 120**  
**VNS Interface/ISL Interface Comparison**



Similar to the case of an ISL interface, the D-channel used for VNS can be shared with the D-channel of a Primary Rate Interface (PRI) that links two Meridian 1 switches, or it can use a D-channel that communicates with the far end through a pair of dedicated line modems, dial-up modems, or Meridian 1 data adapters.

When the D-channel used by VNS is on a PRI, the D-channel mode is defined as USR = SHAV, in LD 17, meaning that VNS, ISL and ISDN PRI calls can share this D-channel. In the other situation, the D-channel is defined as (USR = VNS in LD 17) which allows ISL, and VNS calls to use this D-channel for signaling.

The following types of trunks and connectivities can be used for VNS calls:

The following types of trunk and connectivity can be used for VNS calls:

- PRI trunks with:  
Meridian Customer Defined Network (MCDN) connectivity.
- Analog trunks with:  
disconnect supervision.
- 1.5 Mbps Digital Trunk Interface (DTI) trunks with:  
Digitone Signaling (DTN), or Dial Pulse Signaling (DIP) connectivity.

All of these trunks are being referenced throughout this document as the VNS Bearers, or simply the Bearer trunks.

Although the VNS feature can use Central Office Trunks (COT), Direct Outward Dialing (DOD), and Direct Inward Dialing (DID) trunks to link two Meridian 1 nodes, VNS calls are presented, handled, and interact with other features as though private ISDN TIE trunks are used for that purpose. The exceptions that apply are stated in the “Feature interactions” section.

Note that TIE trunks can also be used with VNS. When this is the case, the connection does not necessarily need to be a direct Meridian 1 to Meridian 1 connection (e.g., when QSIG is used).

### **Speechpath availability**

When extending a call to a Remote node, the attendant relies on the tones and lamp states to determine if it is possible to extend a call, camp-on a busy extension, break-in to a conversation, etc.

When using a VNS Bearer trunk, the tones can be those of the PSTN (especially for “intelligent” trunks such as ISDN connectivity). For example, when extending a call to a busy set over an ISDN PSTN Bearer, the attendant hears busy tone (from the PSTN) instead of silence.

If Attendant Console operation has to remain the same with VNS, an answer signal has to be sent right away to the PSTN for attendant extended calls, whatever the state of the terminating party. This allows the attendant to hear the tones coming from the terminating Meridian 1 node, instead of tones from the PSTN.

The prompt VRAT exists for the incoming Bearer route (LD 16) to allow or disallow automatic answering of attendant extended calls. The Network Attendant Service (NAS) feature must be configured to provide this functionality.

When a route is configured with VRAT = YES, tones are similar to those provided on a private Meridian 1 ISDN PRI network; however, some unanswered calls may be charged. If a route is configured with the default value (VRAT = NO), tones heard when extending a call from the attendant might be different than the ones provided over a private Meridian 1 ISDN network. Users are not charged for unanswered calls.

### **PSTN clearing of unanswered calls**

In some countries, a PSTN call left unanswered is disconnected after a few minutes, in order to reduce the usage of equipment that has not been paid for. This creates a major difference between private networks using TIE lines and private networks using VNS. For example, with VNS a call left in a camp-on state would be cleared by the public network after several minutes.

The VNS Set Speechpath (VSS) timer of the incoming Bearer route (LD 16) can be configured to avoid this situation. It defines the interval after which an answer signal is sent from the terminating Meridian 1 node to the Public Exchange/Central Office.

The configuration of the VSS timer has an impact on the cost of the calls, because the public network starts charging upon the reception of the answer signal.

## Numbering Plan

A requirement of VNS is that customers have to configure VNS DNs (VDNs) as part of their numbering plan. The VNS VDN expansion feature sets a new limit on the number of VDNs at 4000. VDNs are configured on Overlay 79.

The VDNs are defined in sets of blocks. Each block may contain any number of contiguous VDNs, as long as the total number does not exceed 4000.

Within a block, it is possible to define a range of VDNs as well as individual VDNs. For example, a customer may define the following VDNs (in this example, the customer is defining a total of 164 VDNs.)

7200-7299  
7320-7325  
7355  
7400-7455  
7676

A customer may remove a block of contiguous VDNs, as long as there is no VNS call using a VDN in the block. To remove a block of contiguous VDNs, the block has to be first disabled in Overlay 79 (by entering DIS against the REQ prompt), to prevent new VNS calls from using any of the VDNs in the block. Once the block has been disabled, the system administrator has to wait until all the VNS calls, using any of the VDNs in the block, are cleared.

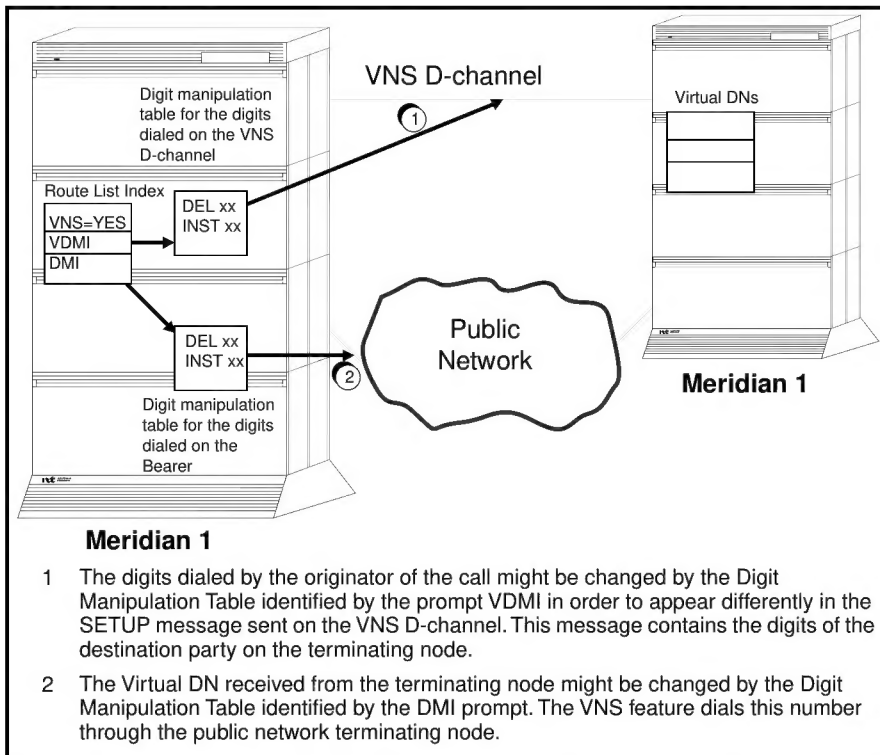
The system administrator can determine the number of VDNs used by VNS calls, by printing VNS information using the PRT command in response to the REQ prompt in Overlay 79 (note that the block of VDNs must be first disabled.) Once all of the VDNs are free (unused), the block of VDNs may be removed by using the OUT command.

An Electronic Switched Network (ESN) call is identified as being VNS once a valid entry configured when the prompt VNS = YES has been found in a Route List Block (LD 86) used for the digits dialed. A SETUP message is sent to the terminating node on the VNS D-channel. Manipulation of the digits included in the SETUP message is performed, if needed, using the digits dialed and according to the content of the Digit Manipulation Table referenced with the prompt VDMI.

On reception of the SETUP request, the terminating node sends one of its Virtual DNs back to the originating node. The terminating node expects to receive a call for that Directory Number (VDN) from one of its trunks linked to the public network. The originating node, upon reception of the VDN,

seizes a trunk and dials a number consisting of the VNS Virtual DN affected by the manipulations defined in the Digit Manipulation Table referenced by the prompt DMI. These manipulations are performed in order to dial the Virtual DN through the public network to the destination node.

**Figure 121**  
**Digit Manipulation**



### Failure of VNS D-channel

If the D-channel is not operable, the VNS route list entry is chosen, and then this entry is bypassed. In a network VNS environment, calls will remain queued at the source node.

If the VNS D-channel fails when a call is established, the call remains established. This is, however, without the ability to use the networking features normally supported by the VNS feature.

### **Failure of Bearer**

Failure of the VNS Bearer trunk results in the VNS call being cleared.

## **Operating parameters**

No new hardware is required for the VNS feature.

VNS requires a contiguous block of existing unused DNs (virtual DNs) at both the originating and the terminating nodes, which are a subset of the DID range of the customer. VNS virtual DNs can be up to seven digits long. A maximum of 100 virtual DNs can be assigned per customer.

### **VNS D-channel**

VNS requires an established D-channel between the originating and terminating nodes for signaling. No intermediate nodes are permitted.

A VNS D-channel belongs to only one customer and cannot be shared by other customers for VNS calls.

VNS does not support Backup D-channels for VNS signaling.

D-channels provided by Basic Rate Interface (BRI) are not supported as VNS D-channels.

VNS reverts back to conventional signaling if the VNS D-channel fails.

### **VNS Bearer Trunks**

Disconnect supervision is mandatory for all trunks, while answer supervision is not. In cases when it is not available, VNS will assume that the Bearer is answered as soon as the “end-of-dialing” timer has expired.

The following trunks are not supported as VNS Bearer trunks:

- Autoterminate trunks;
- Analog Private Networking Signalling System (APNSS); and
- Basic Rate Interface trunks (used for NUMERIS, 1TR6 or MCDN).

The following signaling systems are not supported for VNS:

- Japan D70; and
- Multifrequency Extended Signaling for Socotel (MFE).

Any Incoming Digit Conversion on the incoming VNS Bearer trunk causes a VNS call to fail.

Data calls are supported only if the Bearer supports data calls.

### **Maximum number of VNS calls**

Different elements control the maximum number of simultaneous VNS calls that can be processed by a Meridian 1 system. The number depends on the resources allocated for the VNS feature itself, the resources to be used for the voice path (Bearer trunks) and the resources available for VNS signaling over the D-channel.

#### ***For each customer***

It is not possible to perform more VNS calls (incoming and outgoing) than the number of Virtual DNs defined for the customer in LD 79.

The number of VNS calls is limited by the number of available Bearer trunks. When all Bearers defined to be usable with VNS are busy, no other VNS calls can be made.

#### ***For each D-channel of the customer***

The maximum number of VNS calls allowed to use a D-channel is limited by the value defined to the D-channel by the VNSM prompt in LD 17.

#### ***For each entry in a Route List Block***

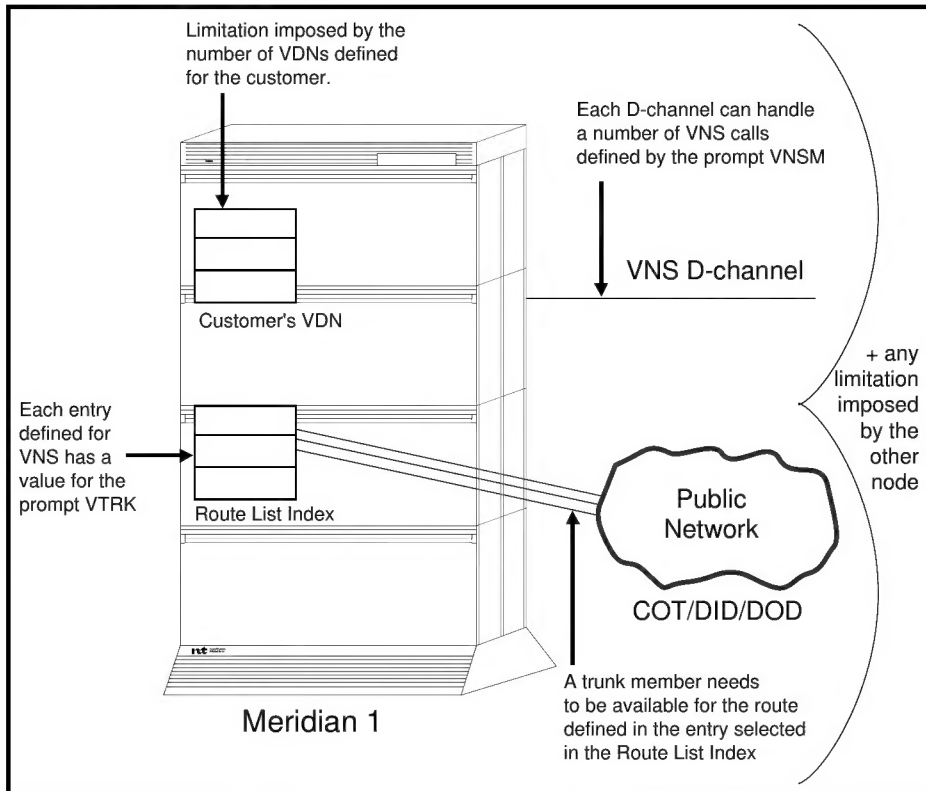
The maximum number of VNS calls that can be performed on a route listed in an entry of a Route List Block in LD 86 is limited by the value entered in response to the VTRK prompt.

#### ***On a network level***

In the case of a non-symmetrical configuration between originating and terminating VNS nodes, the call limitation imposed by the more restrictive node applies.



**Figure 122**  
**VNS Call Limitations**



## Feature interactions

The following features are supported over VNS routes:

- Attendant Barge-In
- Attendant Break-In
- Attendant Recall with Splitting
- Basic Authorization Code
- Basic Rate Interface/Primary Rate Interface Interworking

- Calling Party Number
- Call Party Name Display
- Call Selection (ICI + loop)
- Console Digit Display
- Control of Trunk Group Access
- Digit Display
- Display of Calling Party Denied
- Electronic Lock Network Wide/Electronic Lock on Private Lines
- Network Attendant Service
- Network Call Redirection
- Network Class of Service
- Network Flexible Feature Codes
- Network Message Center
- Network Message Service to Meridian Mail
- Network Ring Again
- Network Ring Again No Answer
- Originator Routing Calls
- Radio Paging
- Trunk Optimization Before Answer

In addition, VNS has interactions with the following features:

### **Access Restriction**

When a user has trunk access barred (i.e., via Trunk Group Access Restriction (TGAR), New Flexible Call Restriction (NFCR), or Toll Denied Class of Service), the user will still be able to make a VNS call.

If a customer wants users to be toll restricted even for VNS calls, the Minimum Facility Restriction Level (FRL) in the Route List Block (i.e., LD 86) can be used.

**Analog Private Networking Signalling System (APNSS)**

APNSS trunks cannot function as VNS Bearer trunks.

**Attendant Call**

When an attendant extends a call over a VNS network, it is not possible to release the call before the status of the destination is known. This applies regardless of Network Attendant Service (NAS) configuration.

**Autoterminate**

Autotermination on VNS Bearer trunks is not supported, because a VNS Virtual DN is expected on a VNS Bearer exactly the way it was passed back on the VNS D-channel.

**Call Detail Recording (CDR)**

Call Detail Recording is supported on VNS routes with the exception of the 911 CDR Improvement and Meridian 911 ANI in CDR features. The CDR output is controlled by the Bearer trunk (i.e., CDR output defines the details of the call made on the Bearer, and not the VNS D-channel). The Calling Line Identity will be output in the CDR record for incoming calls.

**Call Pickup Network- Wide**

The Call Pickup Network Wide feature will not work in conjunction with the Virtual Network Services feature.

**Calling Line Identification**

Calling Line Identification is supported on VNS routes. All display information is taken from messages on the VNS D-channel. The VNS Bearer does not drive the display of such information.

**Charge Display at End of Call**

In the case of VNS calls, no charge information is displayed.

**Direct Inward Dialing (DID) Treatment**

Since VNS is handling calls as though they were made using ISDN TIE trunks even when VNS DID Bearer trunks are used, the VNS feature does not adhere to the special treatment given to regular DID trunks.

### **Distinctive Ringing**

Except in the case of Network Distinctive Ringing, the Distinctive Ringing feature is not supported by VNS. An incoming call using VNS on a Bearer trunk defined with the prompt DRNG = YES will ignore this value and will perform the same treatment as though the value was DRNG = NO (i.e., no distinctive ringing provided).

### **Electronic Switched Network (ESN)**

The following ESN features are supported on VNS routes:

- ESN Basic Automatic Route Selection
- ESN Coordinated Dialing Plan Routing Enhancement
- ESN Coordinated Dialing Plan
- ESN (999 Loc.)
- ESN Flexible Numbering Plan
- ESN Free Calling Area Screening
- ESN Incoming Trunk Group Exclusion
- ESN Network Authorization Code
- ESN Network Automatic Route Selection
- ESN Network Routing Controls (Time-of-day Scheduling)
- ESN Network Speed Call
- ESN Tone Detection, and
- ESN Off-Hook Queuing.

### **Incoming Digit Conversion**

Since VNS Virtual DNs must be received on the incoming VNS Bearer (DID) trunks, as they are defined at the terminating node, the VNS feature is not supported for routes that perform digit conversion on the digits used for VNS Virtual DNs.

### **ISDN Call Connection Limitation (ICCL) Checks**

The VNS trunk from the external network looks exactly like an ISDN TIE trunk and accordingly is subject to ICCL checks and call restrictions applied thereon.

**ISDN QSIG Basic Call**

A QSIG link can be used as a B-channel for the Virtual Network Service (VNS) over a private network. All VNS services are supported as normal. QSIG is only used as a speech bearer.

**Intercept Treatment**

Intercept treatment applied to VNS calls is configured as for TIE trunks.

**Network ACD**

Network ACD (NACD) is supported by VNS. When a call queued at a source node receives notification that an agent is free and reserved at the target node, a VNS call is made to the target node. At that time, the call is removed from the queue at the source node. The call will continue to receive ringback (or Recorded Announcement (RAN) if configured) while it is waiting for the VNS call to be completed. When an alerting message is received from the target node, the ringback or RAN is removed and the speechpath with the Bearer is connected. The user will thus hear ringback tone (given either by the PSTN or the Meridian 1 at the target node, depending on the Bearer type), until the agent answers the call.

If for some reason the ALERTING message is not received, the user is requeued (at the top of the queue at the source node). Since ringback or RAN were not removed in the first place, the user is unaware that an attempt to reach a remote agent has been made and has failed.

Since PSTN Bearer trunk call establishment may take longer than PRI2 TIE trunk call establishment, it is necessary to allow more time for the call to arrive at the agent's set than provided by the regular NACD feature. The Agent Reservation Timer should be configured to accommodate a longer interval.

If an agent is reserved at the target node, but the call fails to reach that node (e.g., all trunks are busy), the agent will stay reserved until NACD Target Reservation Timer (RAGT) expires (the target node has no indication that the call has encountered a busy condition). This is more critical when NACD is used with VNS, because (RAGT) must be set to a greater value.

NACD allows up to 20 remote target nodes to be defined in the routing tables. Since the maximum number of VNS Virtual DNs per customer is 100, it is not realistic to configure 20 target nodes using VNS routing: this would only

allow five Virtual DN's per target node and thus a maximum of five simultaneous calls.

### **Network Call Party Name Display**

Network Call Party Name Display is supported on VNS routes. All display information is taken from messages on the VNS D-channel. The VNS Bearer does not drive the display of such information.

### **Network Distinctive Ringing**

For an incoming DID call (without VNS) that tandems to another node using VNS, the feature will be supported as it would have been if an ISDN TIE trunk had been used for the VNS call.

### **Trunk Barring**

Three cases apply for Trunk Barring:

- 1** When the second trunk involved in the call is used by VNS, no trunk barring is applied regardless of the configuration of the first trunk. The call is always allowed to get through.  
  
*Note:* This implementation completely overrides the Trunk Barring feature.
- 2** When the first trunk involved in the call uses VNS, and the second one is not used by VNS, trunk barring is performed according to the content of the default Access Restriction Table (ART) for the TIE trunk.
- 3** When neither the first trunk nor the second trunk is involved in a VNS call, the usual rules for Trunk Barring apply.

### **Vacant Number Routing**

Calls rerouted by the Vacant Number Routing feature are not allowed to have digit manipulation performed on the DN dialed. Thus, for non VNS calls, no Digit Manipulation Index (DMI) can be associated in the Route List Index (RLI) used by Vacant Number Routing. For VNS calls (in LD 86, the entries on this RLI are defined with the prompt VNS = YES), it is not allowed to associate any manipulation on the digits included in the messages exchanged over the VNS D-channel. In these cases, the prompt VMDI is not displayed, but the prompt DMI is still displayed.

## Feature packaging

The Virtual Network Services (VNS) package is 183.

The following software packages are also required for VNS:

- Network Alternate Route Selection (NARS) package 58, dependent on:
  - Basic Routing (BRTE) package 14; and
  - Network Class of Service (NCOS) package 32;
- Integrated Services Digital Network (ISDN) package 145;
- Integrated Services Digital Network Supplementary (ISDNS) package 161;
- ISDN Signaling Link (ISL) package 147; and
- Advanced Network Services (NTWK) package 148.

## Feature administration

### LD 17 – Configure Virtual Network Services.

| Prompt | Response          | Description                                                                                                                                 |
|--------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| REQ    | NEW, CHG          | New, or change.                                                                                                                             |
| TYPE   | ADAN<br>aaa<br>xx | Release 19 gate opener.<br>DCH<br>0 - 15                                                                                                    |
| ...    |                   |                                                                                                                                             |
| - USR  | VNS<br><br>SHAV   | To define a D-channel used for Virtual Network Services (or ISLD).<br>To define a D-channel shared between PRI and VNS (and ISLD).          |
| - VNSM | 0-100             | Define the maximum number of VNS channels over the D-channel.                                                                               |
| - VNSC | xx                | Virtual Network Services Customer number.                                                                                                   |
| - VNSP | 0-32700           | Private Network Identifier (PNI) of the far end customer.                                                                                   |
| - VNCA | YES               | Network Call Party Name Display is available over this D-channel for VNS.                                                                   |
| - VCRD | YES               | Network Call Redirection is available over this D-channel for VNS.                                                                          |
| - VTRO | YES               | Trunk Route Optimization before answer is available over this D-channel for VNS. This prompt is optional and is not a prerequisite for VNS. |



The following steps describe how to:

- Add or create a new single VDN or a block of contiguous VDNs
- Remove a single VDN or a block of contiguous VDNs
- Disable or enable a block of VDNs, or print VNS information for a customer

**LD 79** - Add or create a new single VDN or a block of contiguous VDNs.

| Prompt | Response                            | Description                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| REQ    | NEW                                 | Add or create a new single VDN or a block of contiguous VDNs.<br><b>Note:</b> The CHG command is not supported; you must use the NEW command to enter information.                                                                                                                                                                                                                                                    |
| TYPE   | VNS                                 | Virtual Network Services.                                                                                                                                                                                                                                                                                                                                                                                             |
| CUST   | xx                                  | Customer number.                                                                                                                                                                                                                                                                                                                                                                                                      |
| VNDN   | xx...x<br>1-4000 xx...x<br><br><CR> | Individual VDN to be added.<br>1-4000 = number of contiguous VDN to be added<br>xx...x = first VDN to be added.<br><br>You may add another single VDN or a block of contiguous VDNs by entering <CR> after the VNDN entry. VNDN is prompted until <CR> is entered. In this case, the REQ prompt will appear again.<br><br><b>Note:</b> For the above entries, the VDNs must be part of the customer's numbering plan. |

**LD 79** - Remove a single VDN or a block of contiguous VDNs, or remove all existing VDN data blocks.

| Prompt | Response                       | Description                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| REQ    | OUT                            | Remove a single VDN or a block of contiguous VDNs, or remove all existing VDN data blocks.<br><b>Note:</b> You cannot remove only certain VDNs from a block; you have to remove the entire block.                                                                                                                                                                                                                               |
| TYPE   | VNS                            | Virtual Network Services.                                                                                                                                                                                                                                                                                                                                                                                                       |
| CUST   | xx                             | Customer number.<br>At least one D-Channel must be configured with USR = VNS or USR = SHAV and having VNS = customer number.                                                                                                                                                                                                                                                                                                    |
| VNDN   | XALLVDNS<br>xx...x<br><br><CR> | Remove all VNS data blocks.<br>Remove an individual VDN, or the first VDN of a block of contiguous VDNs.<br><br>You may remove another single VDN, or a block of contiguous VDNs, by entering <CR> after the VNDN entry. VNDN is prompted until <CR> is entered. In this case, the REQ prompt will appear again.<br><br>If XALLVDNS is entered, the message REMOVE ALL VDN BLOCKS? is then output, followed by the CONF prompt. |
| CONF   | YES                            | To confirm the removal of all VDN blocks.                                                                                                                                                                                                                                                                                                                                                                                       |

**LD 79** – Disable or enable single VDN, or a block of contiguous VDNs.

| Prompt | Response            | Description                                                                                                                                                                                                                                                                                              |
|--------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| REQ    | DIS<br>ENL          | Disable a single VDN or a block of contiguous VDNs<br>Enable a single VDN or a block of contiguous VDNs                                                                                                                                                                                                  |
| TYPE   | VNS                 | Virtual Network Services.                                                                                                                                                                                                                                                                                |
| CUST   | xx                  | Customer number.<br><br>At least one D-Channel must be configured with USR = VNS or USR = SHAV and having VNS = customer number.                                                                                                                                                                         |
| VNDN   | xx....x<br><br><CR> | Individual VDN, or first VDN of a block of contiguous VDNs to be disabled or enabled.<br><br>You may enable or disable another single VDN, or a block of contiguous VDNs, by entering <CR> after the VNDN entry. VNDN is prompted until <CR> is entered. In this case, the REQ prompt will appear again. |

# **LD 79– Print VNS information for a customer.**

The information is output after the customer number is entered in response to the CUST prompt.

| Prompt | Response | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| REQ    | PRT      | Print VDN information.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| TYPE   | VNS      | Virtual Network Services.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| CUST   | xx       | <p>Customer number.</p> <p>At least one D-Channel must be configured with USR = VNS or USR = SHA V and having VNS = customer number.</p> <p>The VNS information is output for the customer. For a range of VDNs, the first VDN is displayed, followed by “—” and the last VDN of the block. On the same line, the number of VDNs in the block is displayed in brackets.</p> <p>For a single VDN, the VDN is displayed followed by “(1)”.</p> <p>If a block is disabled, the above indication is followed by the number of VNS calls still using a VDN in the block. These calls have to be cleared before the VDN block can be removed.</p> <p>At the end, the total number of VDNs configured for the customer is output.</p> <p>A sample output could be:</p> <pre>7676 (1) 8100–8199 (100) TOTAL NUMBER OF VDN FOR CUST 2: 101</pre> <p>If the VDN block 8100-8199, containing 100 VDNs, is disabled, the output would be:</p> <pre>7676 (1) 8100–8199 (100) *DISABLED - VDN USED: 2* TOTAL NUMBER OF VDN FOR CUST 2: 101</pre> <p>In this case, the VDN block is disabled and two VNS calls are still using two VDNs. These two calls must first be cleared before the VDN block 8100-8199 can be removed.</p> |

**LD 86** – Assign D-channel number and VNS digit manipulation index to be used when signaling on the Bearer trunk and on the D-channel.

| Prompt                                                                    | Response   | Description                                                           |
|---------------------------------------------------------------------------|------------|-----------------------------------------------------------------------|
| REQ                                                                       | NEW, CHG   | New, or change.                                                       |
| ...                                                                       |            |                                                                       |
| ENTR                                                                      | 0-63       | Entry number for NARS/BARS Route List.                                |
| ROUT                                                                      | 0-511      | The number of the route to be associated with the VNS Bearer channel. |
| VNS                                                                       | YES        | Virtual Network Services.                                             |
| VDCH                                                                      | 0-63       | The D-channel used for these VNS calls (must be configured in LD 17). |
| <div style="border: 1px dashed black; height: 1.2em; width: 100%;"></div> |            |                                                                       |
|                                                                           | 0-15       | For Option T1.                                                        |
| VDMI                                                                      | xxx        | The Digit Manipulation Table to be used on the VNS D-channel.         |
|                                                                           | (0)        | No digit manipulation required.                                       |
|                                                                           | 1-31       | For Coordinated Dialing Plan feature.                                 |
|                                                                           | 1-255      | For NARS/BARS.                                                        |
| VTRK                                                                      | 1-(20)-100 | Number of VNS trunks allowed on the route.                            |
| DMI                                                                       | xxx        | The Digit Manipulation table to be used on the VNS Bearer.            |
|                                                                           | (0)        | No digit manipulation required.                                       |
|                                                                           | 1-31       | For Coordinated Dialing Plan feature.                                 |
|                                                                           | 1-255      | For NARS/BARS.                                                        |

**LD 16** – The following TIMR, TIMR, and VRAT prompts have been added to this overlay:

| Prompt | Response                      | Description                                                                                                                                                                                                                                                                                                            |
|--------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| REQ    | NEW, CHG                      | New, or change.                                                                                                                                                                                                                                                                                                        |
| TYPE   | RDB                           | Route Data Block.                                                                                                                                                                                                                                                                                                      |
| CUST   | xx                            | Customer number.                                                                                                                                                                                                                                                                                                       |
| ROUT   | 0-511                         | The number of the route to be associated with the incoming VNS Bearer channel.                                                                                                                                                                                                                                         |
| CNTL   | YES                           | Change control of timers.                                                                                                                                                                                                                                                                                              |
| - TIMR | VSS<br>(0)<br><br>1<br>2-1023 | VNS Set Speechpath Timer<br>0 = Do not answer the bearer channel until the terminating party answers.<br>1 = Answer the Bearer channel immediately on arrival.<br>2-1023 = Answer the Bearer channel after specified seconds (rounded down to two-second multiples) if the terminating party has not already answered. |
| - TIMR | VGD 0-(6)-31                  | VNS Guard Timer<br><br>The time allowed for the Bearer trunk call to disconnect, in seconds. This is a guard timer on the associated VNS DN.                                                                                                                                                                           |
| ...    |                               |                                                                                                                                                                                                                                                                                                                        |
| VRAT   | (NO) YES                      | VNS Return Attendant Tones Option<br><br>Do (not) answer an attendant extended call over VNS immediately on the incoming Bearer trunk.                                                                                                                                                                                 |

## Feature operation

There are no operating procedures specified for this feature.